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| EXAMINER | |
|---|---|
| HERNANDEZ, NELSON D | |
| **ART UNIT** | **PAPER NUMBER** |
| 2622 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/910,604 | HARADA, KOUICHI | |
| | Examiner | Art Unit | |
| | Nelson D. Hernandez | 2622 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *27 November 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1,2,5-7 and 9-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5-7 and 9-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 July 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Amendment*

1. The Examiner acknowledges the amendment to claims filed on November 27, 2006. Claims 3, 4 and 8 have been canceled. Claims 10-17 have been newly added.

### *Response to Arguments*

2. Applicant's arguments, see pages 14-16, filed November 27, 2006, with respect to the rejection(s) of claim(s) 1, 5-7 and 9 under 35 USC § 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of a different interpretation with previously introduced prior art. The Examiner acknowledges that the Ueda reference does not explicitly disclose that the first and second area are adjacent in the horizontal direction. However, Morimoto discloses the first and second areas adjacent in both the vertical and/or horizontal direction (see figs. 3 and 7). In this Office Action, the Examiner is presenting the Morimoto reference as a primary reference and the Ueda reference as a secondary reference, since the only limitation that is not present in Morimoto is that the second electric-charge transfer section is extending across the entire width of the image section and that the first electric-charge transfer section is disposed between the first area and the second electric-charge transfer section. Said limitations can be found in the Ueda reference.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

**4. Claims 1, 2, 5-7 and 9-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto, US Patent 5,969,7590 in view of Ueda, US Patent 4,837,63.**

**Regarding claim 1**, Morimoto discloses a solid-state image apparatus (See fig. 3) comprising an image section having a plurality of pixels (referred to as photodiodes 101-1) arranged two dimensionally in the horizontal direction and in the vertical direction (See fig. 3), the image section comprising a first area formed of a first pixel group (Fig. 3: 101a) and a second area formed of a second pixel group (Fig. 3: 101b), and the first area and the second area being disposed adjacent to each other in the horizontal direction (See fig. 3), a first electric-charge transfer section (Fig. 3: 102a) disposed outside the image area for transferring the signal electric charges of the first area in the horizontal direction, and a second electric-charge transfer section (Fig. 3: 102b) disposed outside the image area for transferring the signal electric charges of the second area in the horizontal direction, and driving means for driving the first and second electric-charge transfer sections in an identical direction (toward the output sections 103a and 103b; col. 5, lines 61+); wherein the first and second electric-charge transfer sections are disposed such that the first electric-charge transfer section

transfers only the signal electric charges of the first area (See electric-charge transfer section 102a can transfer only the signals of the area 101a) and the second electric-charge transfer section transfers only the signal electric charges of the second area (See electric-charge transfer section 102b can transfer only the signals of the area 101b); and further comprising a vertical transfer section (Fig. 3: 104b) for transferring the signal electric charges of the second area to the second electric-charge transfer section without passing through the first electric charge transfer section (Col. 5, line 23 – col. 6, line 34), wherein the vertical transfer section is disposed between the second area and the second electric-charge transfer section (See fig. 3); and wherein all of the pixels in any one of said column (i.e. columns in area 101a or columns in area 101b) of said image section to be read out of the solid-state image apparatus are transferred to only one of said first electric-charge transfer section and said second electric-charge transfer section (as shown in fig. 3, all the pixels in the columns of area 101a are transferred to only the first electric-charge transfer section 102a and all the pixels in the columns of area 101b are transferred to only the first electric-charge transfer section 102b) (Col. 5, line – col. 6, line 34; col. 7, lines 8-49).

Morimoto does not explicitly disclose that the second electric-charge transfer section is extending across the entire width of the image section and that the first electric-charge transfer section is disposed between the first area and the second electric-charge transfer section.

However, Ueda discloses a solid-state image apparatus comprising: an image section having a plurality of pixels (Fig. 1: 11) arranged two dimensionally in the

horizontal direction and in the vertical direction (See fig. 1), the image section comprising a first area formed of a first pixel group (even lines in the image sensor as shown in figs. 4C and 4D) and a second area formed of a second pixel group (odd lines in the image sensor as shown in figs. 4A and 4B), and the first area and the second area being disposed adjacent to each other in the vertical direction (the odd and even lines are arranged in the whole pixel area, therefore, the first and second areas are disposed adjacent to each other in the vertical direction); a first electric-charge transfer (Fig. 1: 17) section disposed outside the image area for transferring the signal electric charges of the first area in the horizontal direction; a second electric-charge transfer section (Fig. 1: 18) extending across the entire width of the image section and disposed outside the image area (See fig. 1) for transferring the signal electric charges of the second area in the horizontal direction; and driving means (clock, see col. 2, lines 51-60; col. 3, lines 36-50) for driving the first and second electric-charge transfer sections in an identical direction (See also fig. 1 and fig. 4E), wherein the first and second electric-charge transfer sections are disposed such that the first electric-charge transfer section transfers only the signal electric charges of the first area and the second electric-charge transfer section transfers only the signal electric charges of the second area (By using switches 13 as shown in figs. 4A-4D; see col. 3, line 36 – col. 4, line 52); and further comprising a vertical transfer section (Fig. 1: 15) for transferring the signal electric charges of the second area to the second electric-charge transfer section without passing through the first electric-charge transfer section (col. 3, lines 36-50), wherein the first electric-charge transfer section is disposed between the first area and

the second electric-charge transfer section (See horizontal CCD 17 being disposed between first area (even lines area) and the horizontal CCD 18 as shown in fig. 1) and wherein the vertical transfer section is disposed between the second area and the second electric-charge transfer section (See vertical CCD 15 disposed between the second area (odd lines area) and the horizontal CCD 18) (Col. 2, lines 38-60; col. 3, lines 36-52; see also col. 4, line 53 – col. 5, line 37).

Although the operation of the image sensor in Ueda appear to be taught for a different operation to the concept in Morimoto, one of ordinary skill in the art would find obvious to use the concept of having two horizontal registers, wherein the dimension of at least one of the horizontal registers extends across the entire width of the image section and apply said concept to Morimoto so as to have the second electric-charge transfer section is extending across the entire width of the image section that would result in having the first electric-charge transfer section is disposed between the first area and the second electric-charge transfer section since the second electric-charge transfer section would extend the entire width of the image section having said first electric-charge transfer section positioned between the second electric-charge transfer section and the image sensor. The motivation would have been to reduce the length of the wiring in a printed circuit to carry the output of both horizontal registers, also to arrange all the outputs at a closer position in order to read said outputs in a simultaneous fashion that would also reduce the presence of noise due to the length of the wiring receiving the outputs form the horizontal registers.

**Regarding claim 2**, the combined teaching of Morimoto in view of Ueda teaches that the driving means drives the first and second electric-charge transfer sections by an identical driving signal (See Ueda, col. 2, lines 38-60; col. 3, lines 51-66; col. 5, lines 15-37; see also Morimoto, col. 6, lines 35-37).

**Regarding claim 5**, Morimoto discloses a solid-state image apparatus (See fig. 3) comprising an image section having a plurality of pixels (referred to as photodiodes 101-1) arranged two dimensionally in the horizontal direction and in the vertical direction (See fig. 3), the image section comprising a first area formed of a first pixel group (Fig. 3: 101a) and a second area formed of a second pixel group (Fig. 3: 101b), and the first area and the second area being disposed adjacent to each other in the horizontal direction (See fig. 3), a first electric-charge transfer section (Fig. 3: 102a) disposed outside the image area for transferring the signal electric charges of the first area in the horizontal direction, and a second electric-charge transfer section (Fig. 3: 102b) disposed outside the image area for transferring the signal electric charges of the second area in the horizontal direction, and driving means for driving the first and second electric-charge transfer sections in an identical direction (toward the output sections 103a and 103b; col. 5, lines 61+); wherein the first and second electric-charge transfer sections are disposed such that the first electric-charge transfer section transfers only the signal electric charges of the first area (See electric-charge transfer section 102a can transfer only the signals of the area 101a) and the second electric-charge transfer section transfers only the signal electric charges of the second area (See electric-charge transfer section 102b can transfer only the signals of the area

101b); and further comprising a vertical transfer section (Fig. 3: 104b) for transferring the signal electric charges of the second area to the second electric-charge transfer section without passing through the first electric charge transfer section (Col. 5, line 23 – col. 6, line 34), wherein the vertical transfer section is disposed between the second area and the second electric-charge transfer section (See fig. 3); and wherein all of the pixels in any one of said column (i.e. columns in area 101a or columns in area 101b) of said image section to be read out of the solid-state image apparatus are transferred to only one of said first electric-charge transfer section and said second electric-charge transfer section (as shown in fig. 3, all the pixels in the columns of area 101a are transferred to only the first electric-charge transfer section 102a and all the pixels in the columns of area 101b are transferred to only the first electric-charge transfer section 102b) (Col. 5, line – col. 6, line 34; col. 7, lines 8-49).

Morimoto does not explicitly disclose that the second electric-charge transfer section is extending across the entire width of the image section and that the first electric-charge transfer section is disposed between the first area and the second electric-charge transfer section.

However, Ueda discloses a solid-state image apparatus comprising: an image section having a plurality of pixels (Fig. 1: 11) arranged two dimensionally in the horizontal direction and in the vertical direction (See fig. 1), the image section comprising a first area formed of a first pixel group (even lines in the image sensor as shown in figs. 4C and 4D) and a second area formed of a second pixel group (odd lines in the image sensor as shown in figs. 4A and 4B), and the first area and the second

area being disposed adjacent to each other in the vertical direction (the odd and even lines are arranged in the whole pixel area, therefore, the first and second areas are disposed adjacent to each other in the vertical direction); a first electric-charge transfer (Fig. 1: 17) section disposed outside the image area for transferring the signal electric charges of the first area in the horizontal direction; a second electric-charge transfer section (Fig. 1: 18) extending across the entire width of the image section and disposed outside the image area (See fig. 1) for transferring the signal electric charges of the second area in the horizontal direction; and a vertical transfer section (Fig. 1: 15) for transferring the signal electric charges of the second area to the second electric-charge transfer section without passing through the first electric-charge transfer section (col. 3, lines 36-50), wherein the first electric-charge transfer section is disposed between the first area and the second electric-charge transfer section (See horizontal CCD 17 being disposed between first area (even lines area) and the horizontal CCD 18 as shown in fig. 1) and the vertical transfer section is disposed between the second area and the second electric-charge transfer section (See vertical CCD 15 disposed between the second area (odd lines area) and the horizontal CCD 18) (Col. 2, lines 38-60; col. 3, lines 36-52; see also col. 4, line 53 – col. 5, line 37).

Although the operation of the image sensor in Ueda appear to be taught for a different operation to the concept in Morimoto, one of ordinary skill in the art would find obvious to use the concept of having two horizontal registers, wherein the dimension of at least one of the horizontal registers extends across the entire width of the image section and apply said concept to Morimoto so as to have the second electric-charge

transfer section is extending across the entire width of the image section that would result in having the first electric-charge transfer section is disposed between the first area and the second electric-charge transfer section since the second electric-charge transfer section would extend the entire width of the image section having said first electric-charge transfer section positioned between the second electric-charge transfer section and the image sensor. The motivation would have been to reduce the length of the wiring in a printed circuit to carry the output of both horizontal registers, also to arrange all the outputs at a closer position in order to read said outputs in a simultaneous fashion that would also reduce the presence of noise due to the length of the wiring receiving the outputs form the horizontal registers.

**Regarding claim 6**, claim 6 is a method claim of claim 1, therefore, limitations can be found in claim 1.

**Regarding claim 7**, Morimoto discloses a solid-state image apparatus (See fig. 3) comprising an image section having a plurality of pixels (referred to as photodiodes 101-1) arranged two dimensionally in the horizontal direction and in the vertical direction (See fig. 3), the image section comprising a first area formed of a first pixel group (Fig. 3: 101a) and a second area formed of a second pixel group (Fig. 3: 101b), and the first area and the second area being disposed adjacent to each other in the horizontal direction (See fig. 3), a first electric-charge transfer section (Fig. 3: 102a) disposed outside the image area for transferring the signal electric charges of the first area in the horizontal direction, and a second electric-charge transfer section (Fig. 3: 102b) disposed outside the image area for transferring the signal electric charges of the

second area in the horizontal direction, and driving means for driving the first and second electric-charge transfer sections in an identical direction (toward the output sections 103a and 103b; col. 5, lines 61+); wherein the first and second electric-charge transfer sections are disposed such that the first electric-charge transfer section transfers only the signal electric charges of the first area (See electric-charge transfer section 102a can transfer only the signals of the area 101a) and the second electric-charge transfer section transfers only the signal electric charges of the second area (See electric-charge transfer section 102b can transfer only the signals of the area 101b); and further comprising a vertical transfer section (Fig. 3: 104b) for transferring the signal electric charges of the second area to the second electric-charge transfer section without passing through the first electric charge transfer section (Col. 5, line 23 – col. 6, line 34), wherein the vertical transfer section is disposed between the second area and the second electric-charge transfer section (See fig. 3); and wherein all of the pixels in any one of said column (i.e. columns in area 101a or columns in area 101b) of said image section to be read out of the solid-state image apparatus are transferred to only one of said first electric-charge transfer section and said second electric-charge transfer section (as shown in fig. 3, all the pixels in the columns of area 101a are transferred to only the first electric-charge transfer section 102a and all the pixels in the columns of area 101b are transferred to only the first electric-charge transfer section 102b) (Col. 5, line – col. 6, line 34; col. 7, lines 8-49).

Morimoto does not explicitly disclose that the second electric-charge transfer section is extending across the entire width of the image section and that the first

electric-charge transfer section is disposed between the first area and the second electric-charge transfer section.

However, Ueda discloses a camera system (See fig. 5) comprising: a solid-state image apparatus (See figs. 1, 4A-4F and 7-10), the solid-state image apparatus comprising: an image section having a plurality of pixels (Fig. 1: 11) arranged two dimensionally in the horizontal direction and in the vertical direction (See fig. 1), the image section comprising a first area formed of a first pixel group (even lines in the image sensor as shown in figs. 4C and 4D) and a second area formed of a second pixel group (odd lines in the image sensor as shown in figs. 4A and 4B), and the first area and the second area being disposed adjacent to each other in the horizontal direction (the odd and even lines are arranged in the whole pixel area, therefore, the first and second areas are disposed adjacent to each other in the horizontal and vertical direction); a first electric-charge transfer (Fig. 1: 17) section disposed outside the image area for transferring the signal electric charges of the first area in the horizontal direction; a second electric-charge transfer section (Fig. 1: 18) extending across the entire width of the image section and disposed outside the image area (See fig. 1) for transferring the signal electric charges of the second area in the horizontal direction; and driving means (clock, see col. 2, lines 51-60; col. 3, lines 36-50) for driving the first and second electric-charge transfer sections in an identical direction (See also fig. 1 and fig. 4E), a vertical transfer section (Fig. 1: 15) for transferring the signal electric charges of the second area to the second electric-charge transfer section without passing through the first electric-charge transfer section (col. 3, lines 36-50), a signal processing

circuit for combining output signals of the solid-state image apparatus to generate a signal corresponding to signal electric charges of one line in the image section (see col. 5, line 38 – col. 6, line 19), wherein the first electric-charge transfer section is disposed between the first area and the second electric-charge transfer section (See horizontal CCD 17 being disposed between first area (even lines area) and the horizontal CCD 18 as shown in fig. 1) and wherein the vertical transfer section is disposed between the second area and the second electric-charge transfer section (See vertical CCD 15 disposed between the second area (odd lines area) and the horizontal CCD 18) (Col. 2, lines 38-60; col. 3, lines 36-52; see also col. 4, line 53 – col. 5, line 37).

Although the operation of the image sensor in Ueda appear to be taught for a different operation to the concept in Morimoto, one of ordinary skill in the art would find obvious to use the concept of having two horizontal registers, wherein the dimension of at least one of the horizontal registers extends across the entire width of the image section and apply said concept to Morimoto so as to have the second electric-charge transfer section is extending across the entire width of the image section that would result in having the first electric-charge transfer section is disposed between the first area and the second electric-charge transfer section since the second electric-charge transfer section would extend the entire width of the image section having said first electric-charge transfer section positioned between the second electric-charge transfer section and the image sensor. The motivation would have been to reduce the length of the wiring in a printed circuit to carry the output of both horizontal registers, also to arrange all the outputs at a closer position in order to read said outputs in a

simultaneous fashion that would also reduce the presence of noise due to the length of the wiring receiving the outputs form the horizontal registers.

The combined teaching of Ueda in view of Morimoto fails to teach an optical system for guiding incident light to the image section of the solid-state image apparatus.

However, Official Notice is taken that the use of optical system for guiding incident light to the image section of a solid-state image apparatus is notoriously well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Morimoto and Ueda by having an optical system for guiding incident light to the image section of the solid-state image apparatus. The motivation to do so would have been to improve the image being captured depending on the application (increasing depth of field, zooming, focusing, etc).

**Regarding claim 9**, limitations have been discussed and analyzed in claims 1, 5 and 7. Therefore, grounds for rejecting claims 1, 5 and 7 apply here.

**Regarding claim 10**, Morimoto discloses that the first pixel group comprising said first area are comprised of a first plurality of immediately adjacent pixels in both the vertical and horizontal direction (as shown in fig. 3, the area 101a has a plurality of pixels 101-1 adjacent in both the vertical and horizontal directions); and said second pixel group comprising said second area are comprised of a second plurality of immediately adjacent pixels in both the vertical and horizontal direction (as shown in fig. 3, the area 101b has a plurality of pixels 101-1 adjacent in both the vertical and horizontal directions).

**Regarding claim 11**, limitations have been discussed and analyzed in claims 1 and 10. Therefore, grounds for rejecting claims 1and 10 apply here.

**Regarding claim 12**, limitations have been discussed and analyzed in claims 1 and 10. Furthermore, in fig. 7, Morimoto discloses a plurality of areas being arranged in the horizontal and/or vertical direction (See areas arranged adjacently in both the vertical and horizontal direction in fig. 7). Grounds for rejecting claims 1and 10 apply here.

**Regarding claim 13**, limitations have been discussed and analyzed in claims 1, 5 and 7. Therefore, grounds for rejecting claims 1, 5 and 7 apply here.

**Regarding claim 14**, limitations have been discussed and analyzed in claims 1, 5 and 7. Therefore, grounds for rejecting claims 1, 5 and 7 apply here.

**Regarding claim 15**, Morimoto discloses that the first electric charge transfer section does not extend across the entire width of the image section (See fig. 3: 102a).

**Regarding claim 16**, limitations can be found in claim 15.

**Regarding claim 17**, limitations have been discussed and analyzed in claims 1, 5 and 7. Therefore, grounds for rejecting claims 1, 5 and 7 apply here.

***Conclusion***

5. Because new grounds of rejection have been established for unamended claims 1-9. This Office Action is made **Non-Final**.

***Contact***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson D. Hernandez whose telephone number is (571) 272-7311. The examiner can normally be reached on 8:30 A.M. to 6:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivek Srivastava can be reached on (571) 272-7304. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nelson D. Hernandez
Examiner
Art Unit 2622

NDHH
February 16, 2007

TUAN HO
PRIMARY EXAMINER